

Effectiveness of Intervention Program on Nurses' Practices about Post-Operative Drug Administration of Infants with Tracheoesophageal Fistula

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ABSTRACT

Objectives: To evaluate the nurses' practices regarding drug administration before the intervention program, to evaluate the nurses' practices regarding drug administration after the program (post-test-1-2), To predict whether there is an effect of some demographic characteristics on nurses' practices in pediatric intensive care.

Material: the study implemented during the period from September 14, 2022, to December 15, 2022. A Quazy-experimental design was used, with one group test - re-test method (pre and post-test 1 and post-test 2) for the studied sample. An instrument was developed for the study. A non-probability sample (purposive) includes all male and female nurses working in the pediatric intensive care unit / pediatric surgery center in Nineveh Governorate, whose number is (23).

Result: The average age of the nurses was 28 ± 4.80 years, (52.2%) of their ages ranged between (25-29) years. The nurses' practice was poor (average 30.26 ± 8.86) in the pre-test period and good practice (average 45.30 ± 9.87) in the first post-test with a p-value (0.05).

Conclusions: The study came to the conclusion that the intervention program improved nurses' poor practices regarding post-operative care of infants with tracheoesophageal fistula into good practices and had a significant impact on how nurses administered postoperative medication.

Keywords: Effectiveness, Intervention Program, nurses' practices, Tracheoesophageal Fistula

INTRODUCTION

Tracheoesophageal fistula TEF and esophageal atresia EA are two disorders of the digestive system. It is a congenital malformation consisting of a lack of continuity between the upper and lower esophageal pouch, often accompanied by a tracheal fistula¹. TEF is a pathological connection between the trachea and esophagus. The most common manifestations of TEF are breathing difficulties, dysphagia and recurrent respiratory infections². TEF is classified into two main categories: congenital and acquired. Congenital TEF is mainly associated with esophageal atresia and was first described by Thomas Gibson in 1697³. Since then, the epidemiology, types of atresia, and repair techniques of congenital TEF have been well described, leading to a significant improvement in its management. In contrast, much less is known about acquired TEF, which mainly affects the adult population⁴. Esophageal atresia is characterized by the esophagus's premature termination before reaching the stomach due to its incomplete formation. Most of the time, it comes from a hole in the esophagus or trachea. The Ladd and Gross classified of esophageal atresia into 5 types (from A to E) depending upon the type of atresia and the location of the fistula. Type A—esophageal atresia without TEF. Type B—esophageal atresia with proximal TEF. Type C—esophageal atresia with distal TEF. Type D—esophageal atresia with proximal and distal TEF. Type E—TEF without esophageal atresia⁵. Most infants with EA/TEF require surgical repair in the first few days of life. The repair involves division and ligation of the TEF and primary esophageal anastomosis or lengthening procedures to complete anastomosis in patients with EA and wide separation between the proximal and distal esophageal

segments. Structural anomalies persist in both the trachea and bronchus after surgical repair⁶. The five types are: 1. esophageal atresia with distal tracheo-esophageal fistula (upper segment of the esophagus ends in a blind pouch; lower segment is connected to the trachea by a fistula) (87%). 2. isolated or pure esophageal atresia (blind pouch of upper and lower segments of the esophagus without a connection to the trachea) (8%); 3. tracheoesophageal fistula without esophageal atresia (intact esophagus with fistula between the esophagus and trachea; "H-type") (4%). 4. esophageal atresia with proximal tracheoesophageal fistula (blind pouch at each end of the esophagus with a fistula from the trachea to upper segment of the esophagus) (<1%); 5. esophageal atresia with proximal and distal tracheoesophageal fistula (both upper and lower segments of esophagus connect to the trachea) (<1%).

METHOD AND MATERIALS

A quasi-experimental design was conducted to evaluate the effectiveness of intervention program on nurses practice concerning care of infant with TEF. Study sample selected by purposive, non-probability sampling includes all nurses (23) working in pediatric intensive care unit (PICU)/pediatric surgery center in Nenevah governorate. The study tool was constructed for the purpose of the study, it composed of two parts (*questionnaire* for demographic data and nurses practice *check list*). The validity of the study tool is determined through of panel of experts, and equivalence reliability of the instrument (reliability coefficient 0.92). The data collection process conducted from July 14th, 2022, to October 22nd, 2022, included pre-test, implementation of the intervention program, and post-tests). The observation checklist sheets

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which was developed by the researcher based on related pediatric and critical nursing procedures manual to assess Nurses Practices regarding the Drug Administration (19 steps), This nursing practice was selected to be observed for three trials for every subject of the sample and the mean was depended. Data were analyzed through the application, descriptive, inferential, and non-parametric statistical tests data analysis by using SPSS package⁷⁻¹⁰.

RESULTS

Table 1: Nurses Practices regarding to Drug Administration in Pre-post I and II

| Drug Administration | Poor | | Moderate | | Good | | M ± SD |
|---------------------|------|------|----------|------|------|------|--------------|
| | No. | % | No. | % | No. | % | |
| Pre test | 15 | 65.2 | 6 | 26.1 | 2 | 8.7 | 30.26 ± 8.86 |
| Posttest I | 4 | 17.4 | 6 | 26.1 | 13 | 56.5 | 45.30 ± 9.87 |
| Posttest II | 4 | 17.4 | 7 | 30.4 | 12 | 52.2 | 44.87 ± 9.97 |

[Poor=19-31.66, Moderate=31.67-44.33, Good=44.34-57]

Findings showed that the nurses expressed a poor responses concerning drug administration at the pre-test period 30.26 (±8.86) (before education program). While, at the post-test I (after education program), findings showed that the nurses expressed a good responses concerning administration 45.30 (±9.87). After a month has been passed (posttest II), nurses expressed a same responses of posttest I 44.87 (±9.97) (Table 1).

Table 2: Comparison the Nurses Practices regarding to Drug Administration between the Periods of Measurement

| Drug (I) | Drug (J) | Mean Differences (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|--------------|--------------|------------------------|------------|------|-------------------------|-------------|
| | | | | | Lower Bound | Upper Bound |
| Pre-test | Post-test I | -.79176* | .14894 | .000 | -1.0891- | -.4944- |
| | Post-test II | -.76888* | .14894 | .000 | -1.0662- | -.4715- |
| Post-test I | Pre-test | .79176* | .14894 | .000 | .4944 | 1.0891 |
| | Post-test II | .02288 | .14894 | .878 | -.2745- | .3202 |
| Post-test II | Pre-test | .76888* | .14894 | .000 | .4715 | 1.0662 |
| | Post-test I | -.02288- | .14894 | .878 | -.3202- | .2745 |

Participants' practices of drug administration in the pretest time statistically differs from such practices in the posttest I ($p = .000$) and posttest II ($p = .000$). Such practices in the posttest I statistically differs from that in the pretest time ($p = .000$); and not differs from that in posttest II ($p = .878$). Such practices in the posttest II statistically differs from that in the pretest time ($p = .000$) and that no differs in the posttest I ($p = .878$) (Table 2).

Table 3: Liner Regression among the Study Variables in Predict the Nurses Practices at Post-test I

| Variables | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-----------|-----------------------------|------------|---------------------------|---------|------|
| | B | Std. Error | Beta | | |
| Age | -.017- | .039 | -.111- | -.433- | .671 |
| Gender | -1.131- | .633 | -.446- | -1.786- | .094 |

| | | | | | |
|---------------------|--------|------|--------|--------|------|
| Marital status | .084 | .694 | .033 | .121 | .905 |
| Education level | -.097- | .267 | -.103- | -.364- | .721 |
| Years of Experience | .156 | .401 | .142 | .389 | .703 |
| Experience in ICU | .031 | .511 | .020 | .061 | .952 |
| Training courses | .327 | .524 | .173 | .624 | .542 |

Findings confirmed that the nurses socio-demographic characteristics are not predicted their practices concerning post-operative care of infants with Tracheoesophageal Fistula ($p > 0.05$) (Table 3).

DISCUSSION

Analysis of such characteristics depicts that, the mean age for study participants is 28 (±4.80) among those who aged 25-29 years (52.2%). and the mainstream of them are males (91,3%). Relative to their marital status, the majority of them are married (91,3%). More than half of them are Diploma Degree graduates (65,2%) and (8.7%) of them are Master Degree graduates. Regarding their work in nursing, (60.9%) of them have worked for less than 5 years, and (30.4%). and (8.7%). With respect to their years of experience in intensive care, two-thirds of participants were also, less than 5 years (69.6%). in terms of their training, more than two quarters of them have not received any qualified training program (82. 6%). This study agree with others study¹¹⁻²⁰. Analysis of such overall evaluation indicates that nurses have presented poor practices regarding post-operative care for infants with tracheo-esophageal fistula relative to the standards of nursing procedures of dressing change, (50.69 ± 14.37), but at the posttest I, such procedure concerning practices have been improved, (78.82 ± 16.69) as a result of the implementation of the intervention program. Nurses' practices of this procedure continue to be highly promoted at the posttest II, (80.43 ± 15.78). This may be due to the fact that these nurses have employed the practices that they have learned out of the intervention program on their day-to-day work seriously^{21,22}. So, their practices of such procedure have been dramatically upgraded. A study conducted at Assuit University Children Hospital. Results of this study reveal that (67.5%) of the nurses has competent level of practices regarding neonates with tracheo-esophageal fistula. There were statistically significant differences between total mean scores of the studied nurses' level of practices $p = 0.045^{23-25}$.

CONCLUSION

The Intervention Program is confirmed to be an effective and Nurses' practices regarding post-operative Drug Administration for infants with tracheo- esophageal fistula have been enhanced as result of implementing the Intervention Program. Nurses have lack opportunity to be engaged in training sessions with respect to nursing practices regarding post-operative care for infants with tracheo-esophageal fistula.

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Competing Interest: None

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